

**WHAT IS CLAIMED IS:**

1                   1. In a system for interconnecting an end user machine with a server for the  
2 transmission of data:

3                   first and second base stations connected to the server;  
4                   a subscriber unit connected to the end user machine and normally defining a  
5 first wireless path with the first base station, the subscriber defining a second wireless  
6 transmission path with the second base station when handed off from the first station to the  
7 second base station;

8                   means associated with the subscriber unit for initiating a first control signal  
9 signifying the start of a handoff and a second control signal signifying the completion of the  
10 handoff;

11                   means for establishing a single connection governed by TCP protocols  
12 between the end user machine and the server, each byte in a succession of data packets  
13 received from the server by the end user machine causing the generation of a first actual  
14 acknowledgment signal which contains a first portion indicative of the corresponding byte  
15 and a second portion indicative of the size of the receiving window of the end user  
16 machine;

17                   first means associated with the first base station for intercepting successive  
18 first actual acknowledgment signals;

19                   means coupled to the first intercepting means and responsive to the first  
20 control signal for generating a first simulated acknowledgment signal whose first portion

21 matches that of the then-intercepted first actual acknowledgment signal and whose second  
22 portion is zero; and

23 means for applying the first simulated acknowledgment signal to the server.

1 2. A system as defined in claim 1, in which the system further comprises, in  
2 combination, means coupled to the first monitoring means for storing the then-intercepted  
3 first actual acknowledgment signal, means responsive to the second control signal for  
4 retrieving the stored first actual acknowledgment signal, and means for applying the  
5 retrieved first actual acknowledgment signal to the server.

6 3. A system as defined in claim 1, in which the single connection governed  
7 by the TCP protocols is also effective, in response to each byte in a succession of data  
8 packets received from the end user machine by the server, to cause the generation of second  
9 actual acknowledgment signals each of which contains a first portion indicative of the  
10 corresponding byte and a second portion indicative of the size of the receiving window of  
11 the server; and in which the system further comprises, in combination, second means  
12 associated with the subscriber unit for intercepting successive second actual  
acknowledgment signals from the end user machine, means coupled to the second  
monitoring means and responsive to the first control signal for generating a second  
simulated acknowledgment signal whose first portion matches that of the intercepted second  
actual acknowledgment signal from the server and whose second portion is zero, and means  
for applying the second simulated acknowledgment signal to the end user machine.

1           4. In a gateway unit for controlling data flow in the event of a handoff in a  
2 mobile data packet communication system that transmits a succession of data packets from a  
3 first machine to a second machine in accordance with TCP protocols, the receipt by the  
4 second machine of successive bytes in each of a succession of data packets from the first  
5 machine causing the generation of actual acknowledgment signals each of which contains a  
6 first portion indicative of the corresponding byte and a second portion indicative of the size  
of the receiving window of the second machine:

means for intercepting successive actual acknowledgment signals from the  
second machine;

means responsive to the start of handoff for generating a simulated  
acknowledgment signal whose first portion matches that of the then-intercepted actual  
acknowledgment signal from the second machine and whose second portion is zero; and  
first means for forwarding the simulated acknowledgment signal to the first machine.

1           5. A gateway unit as defined in claim 4, further comprising means for  
2 storing the then-intercepted actual acknowledgment signal, and second means responsive to  
3 the completion of handoff for forwarding the stored actual acknowledgment signal to the  
4 first machine.

1           6. In a gateway unit for controlling data flow in the event of a handoff in a  
2 mobile data packet communication system that transmits a succession of data packets from a

3 first machine to a second machine in accordance with TCP protocols, the receipt by the  
4 second machine of the successive bytes in each of a succession of data packets from the first  
5 machine causing the generation of actual acknowledgment signals each of which contains a  
6 first portion indicative of the corresponding byte and a second portion indicative of the  
7 size of the receiving window of the second machine:

8 means for intercepting successive actual acknowledgment signals from the  
9 second machine;

10 means coupled to the intercepting means and responsive to the start of the  
11 handoff for generating a simulated acknowledgment signal whose first portion matches that  
12 of the then- intercepted actual acknowledgment signal from the second machine and whose  
13 second portion is zero;

14 means coupled to the intercepting means for storing the then-intercepted  
15 actual acknowledgment signal;

16 means responsive to the completion of the handoff for retrieving the stored  
17 actual acknowledgment signal; and

18 means for applying the simulated acknowledgment signal and the retrieved  
19 actual acknowledgment signal to the first machine.

1 7. For use in a wireless communication system adapted to transmit data  
2 packets from a first machine to a second machine in accordance with TCP protocols, the  
3 receipt by the second machine of successive bytes in a succession of data packets from the  
4 first machine causing the generation of actual acknowledgment signals each of which

contains a first portion indicative of the sequence number of the corresponding byte and a second portion indicative of the size of the receiving window of the second machine, a method for controlling data packet transmission in the event of a handoff in such system, which comprises the steps of intercepting successive actual acknowledgment signals from the second machine;

generating, at the start of handoff, a simulated acknowledgment signal whose first portion matches that of the then-intercepted actual acknowledgment signal and whose second portion is zero;

storing a copy of the then-intercepted actual acknowledgment signal;  
sending such simulated acknowledgment signal to the first machine; and

sending the stored copy of the actual acknowledgment signal to the first machine at the completion of handoff.

8. For use in a wireless communication system adapted to transmit data packets from a first machine to a second machine in accordance with TCP protocols, the receipt by the second machine of successive bytes in a succession of data packets from the first machine causing the generation of actual acknowledgment signals each of which contains a first portion indicative of the corresponding byte and a second portion indicative of the size of the receiving window of the second machine, a method for controlling data packet transmission in the event of a handoff in such system, which comprises the steps of :

intercepting successive actual acknowledgment signals;

storing the then-intercepted actual acknowledgment signal;

detecting the start of handoff;  
 generating, when the start of handoff is detected, a simulated  
 acknowledgment signal whose first portion matches that of the then-intercepted actual  
 acknowledgment signal and whose second portion is zero;  
 applying the simulated acknowledgment signal to the first machine;  
 detecting the completion of handoff;  
 retrieving the stored actual acknowledgment signal when the completion of handoff is  
 detected; and  
 applying the retrieved actual acknowledgment signal to the first machine.

9. For use in a wireless communication system adapted to transmit data  
 packets from a first machine to a second machine in accordance with TCP protocols, the  
 receipt by the second machine of successive first bytes in a succession of data packets from  
 the first machine causing the generation of actual acknowledgment signals each of which  
 contains a first portion indicative of the corresponding byte and a second portion indicative  
 of the size of the receiving window of the second machine, a method for controlling data  
 packet transmission in the event of a handoff in such system, which comprises the steps of:  
 intercepting successive actual acknowledgment signals;  
 storing the then-intercepted actual acknowledgment signal;  
 forwarding, to the first machine, a copy of the actual acknowledgment signal  
 next preceding the stored acknowledgment signal;  
 detecting the start of handoff;

13                   generating, when the start of handoff is detected, a simulated  
14 acknowledgment signal whose first portion matches that of the then-intercepted actual  
15 acknowledgment signal and whose second portion is zero;  
16                   forwarding the simulated acknowledgment signal to the first machine;  
17                   detecting the completion of handoff;  
18                   retrieving the stored actual acknowledgment signal when the completion of  
19 handoff is detected; and  
20                   forwarding the retrieved actual acknowledgment signal to the first machine.

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